REMARKS

Claims 12-22 have been examined.

I. Rejections under 35 U.S.C. § 102(e) in view of U.S. Patent No. 6,722,174 to Nishii et al. ("Nishii")

The Examiner has rejected claims 12-14, 18 and 19 under 35 U.S.C. § 102(e) as allegedly being anticipated by Nishii.

A. Claim 12

Applicant submits that claim 12 is patentable over the Nishii reference. For example, Nishii is *not* directed towards obtaining a final product from a directly cast thin strip. Rather, the reference discloses the casting of a "slab", a word which usually designates relatively thick half-products intended to be strongly hot-rolled in subsequent steps. Indeed, the initial thicknesses of the cast materials cited as examples in Nishii are 100 to 200 mm (see Fig. 10), cannot be compared to the thicknesses of 1-10 mm for the thin strip cast between two rotating rolls (as disclosed in the present application). On page 6 of the present Office Action, the Examiner maintains that claim 12 does not define the term "metal strip." Accordingly, by this Amendment, Applicant has amended claim 12 to now recite the thickness of 1-10 mm (see pg. 1, lines 3-12 of present Application). Applicant's position is thus maintained.

Further to the above, Applicant submits that the only mention of direct strip casting between moving walls in Nishii can be found in the "prior art" section where JP 59-85305 is discussed. However, the drawings of JP 59-85305 appear to suggest that the "rotary caster" is a caster where the product is cast between two moving belts. The casting speed of 10m/min, as mentioned in column 3, lines 10-19 of Nishii with regard to JP 59-85305, is sensibly lower than the speeds usually met for thin strip casters between two rotating rolls (i.e., about 60m/min).

Usually, the products cast between two belts are much thicker (several tens of mm) than the strips cast between two rolls. Accordingly, Applicant submits that the discussion of JP 59-85305 in the prior art section of Nishii is insufficient to render Nishii relevant to the claimed method.

Notwithstanding the above, Applicant submits that one skilled in the art would not be motivated to use the features of Nishii, taught as being an alternative solution to the prior art processes cited in the background section thereof, on a thin strip caster with moving walls. For example, although the product of Nishii undergoes an in-line hot-rolling after casting, there is a thickness reduction by hot-pressing in a die before the hot-rolling, which suggests that the product as cast and solidified has an initial thickness which is particularly high.

In column 16, lines 43-59, Nishii discloses the application of a lubricant such as, among others, graphite, onto the product before it enters the die. However, a lubricant application performed just at the exit of the ingot mold, as required by the claimed invention, is not taught in Nishii. In Nishii, graphite can act as a lubricant during the hot-pressing (and perhaps also during the hot-rolling if a sufficient amount of graphite remains on the surface of the product after pressing). Nevertheless, the fact that the lubricant (or a product which would decompose to graphite), is provided to the product only just prior to the pressing step makes it unable to play a part in the protection of the product from oxidation, between the ingot mold and the hot-forming device. Accordingly, there is no gas production from a deposited substance to ensure protection from oxidation.

At least based on the foregoing, Applicant again submits that claim 12 is patentable over the cited reference.

B. Claims 13, 14 and 18

Applicant submits that claims 13, 14 and 18 are patentable at least by virtue of their dependency upon claim 12.

C. Claim 19

Applicant submits that claim 19 is patentable for at least analogous reasons as set forth above with regard to claim 12.

II. Rejection under 35 U.S.C. § 103(a) in view of Nishii and U.S. Patent No. 5,352,373 to Goto et al. ("Goto")

The Examiner has rejected claim 15 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishii in view of Goto.

Since Goto fails to cure the deficient teachings of Nishii, at least in regard to claim 12, Applicant submits that claim 15 is patentable at least by virtue of its dependency.

In addition, claim 15 recites that the product leaving the lubricant layer to subsist is a grease containing $CaCO_3$. The Examiner again cites to Goto in this regard. Goto discloses lubricant compositions for hot-rolling of steels. These compositions are oil-based and contain an alkali-earth metal sulfonate, such as Ca sulfonate. The metal can be provided in excess, for example the Ca in excess can be brought by $CaCO_3$. In column 5, lines 54-65, Goto discloses graphite as a possible additive to the lubricant.

As compared to the invention, the main active lubricant component of Goto, apart from the oil, is a sulfonate. The carbonate has only a marginal part. As for graphite, it too is not the main lubricating agent, but rather is present in the lubricant itself. Thus, the graphite does not result (at least not only) from the decomposition of one of the original components of the

lubricant. Thus, Applicant previously argued that Goto fails to disclose the claimed features, where the graphite resulting from the decomposition of the carbonate is the main lubricant present on the strip surface before the in line hot-rolling (June 28, 2010 Amendment).

In view of the foregoing, Applicant previously argued that Goto does not suggest to apply the oil and sulfonate based-composition upstream of the hot rolling stand, such that its decomposition could produce gases protecting the product to be rolled as soon as it exits the ingot mold.

In the present Office Action, the Examiner responds to the above arguments by basically stating that even if $CaCO_3$ has a minor part in the lubrication of Goto, it would have been obvious to use it as a lubricant in the method of Nishii (pg. 7 of Office Action).

Applicant again submits that in Goto, $CaCO_3$ is not used alone, but rather is mixed with oil and Ca sulfonate. The oil and the sulfonate perform the essential lubricating part in Goto. The function of the $CaCO_3$ is only to bring Ca in excess to the Ca brought by the sulfonate, so as to make the sulfonate overbased (see col. 3, line 16 to col. 4, line 2). Goto explicitly discloses that the $CaCO_3$ particles have no lubricant activity (col. 4, lines 3-10). Accordingly, there is no rational reason why a person skilled in the art would use the $CaCO_3$ alone in a lubrication process before the strip is rolled based on the teachings of Goto. Applicant notes that in the claimed invention, the $CaCO_3$ is not the lubricant: the lubricant is the carbonaceous component which remains on the strip after the $CaCO_3$ has been destroyed by heat after having been thrown onto the strip just under the ingot mold.

In Goto, what becomes of the carbon of the carbonate is not clear, but the possible lubricating activity thereof is surely quite marginal as compared to the lubricating activities of the oil and the sulfonate. Accordingly, a person skilled in the art would not have been motivated

to retain only the carbonate from the composition of Goto and then use only the carbonate to obtain a lubricating effect.

Moreover, the use conditions of $CaCO_3$ in Goto and in the present invention are completely different. In Goto, the $CaCO_3$ is added onto the product to be rolled as a mixture with oil, and probably at a small distance of the hot rolling stand, when the steel is at a temperature which is not disclosed but is probably about 1000°C. In the present invention, $CaCO_3$ is added alone onto the strip at the exit on the ingot mold at a place where the strip temperature is sensibly higher than 1000°C. Applicant submits that these are remarkable differences, and there is no suggestion that an effect of the $CaCO_3$ obtained in Goto would also be obtained in the present invention, and vice versa.

At least based on the foregoing, Applicant again submits that Goto fails to cure the deficient teachings of Nishii and thus, claim 15 is patentable over the cited references.

III. Rejection under 35 U.S.C. § 103(a) in view of Nishii and U.S. Patent No. 3,048,540 to DuBois et al. ("DuBois")

The Examiner has rejected claim 16 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishii in view of DuBois.

Since DuBois fails to cure the deficient teachings of Nishi, at least in regard to claim 12, Applicant submits that claim 16 is patentable at least by virtue of its dependency.

In addition, claim 16 recites that the product leaving a lubricant layer to subsist is acetylene.

The Examiner acknowledges that Nishii fails to disclose the above feature, but conteds that DuBois does. Applicant respectfully traverses the Examiner's assertion. For example,

DuBois discloses lubricant greases which contain carbon black. This carbon black can result from the decomposition of acetylene, but is already in its final state when it is provided onto the strip. On the other hand, in the present invention, acetylene itself can be the product injected onto the strip, resulting in a lubricating layer after its decomposition.

At least based on the foregoing, Applicant submits that DuBois fails to cure the deficient teachings of Nishii, and thus, claim 16 is patentable over the cited references.

IV. Rejection under 35 U.S.C. § 103(a) in view of Nishii and U.S. Patent No. 5,508,119 to Sheu et al. ("Sheu")

The Examiner has rejected claim 17 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishii in view of Sheu.

Since Sheu fails to cure the deficient teachings of Nishi, at least in regard to claim 12, Applicant submits that claim 17 is patentable at least by virtue of its dependency.

In addition, claim 17 recites that the hot rolling is conducted with a reduction rate of at least 50%. The Examiner acknowledges that Nishii fails to disclose the above feature, but again contends that Sheu does. Sheu discloses that the reduction rate of hot-rolling of a strip lubricated by a carbonaceous material can be about 35-60%. In this regard, however, Applicant notes that Sheu deals mainly with Al alloys.

V. Rejection under 35 U.S.C. § 103(a) in view of Nishii and U.S. Patent No. 6,145,581 to Takeuchi et al. ("Takeuchi")

The Examiner has rejected claim 20 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishii in view of Takeuchi.

Since Takeuchi fails to cure the deficient teachings of Nishi, at least in regard to claim 19, Applicant submits that claim 20 is patentable at least by virtue of its dependency.

In addition, claim 20 recites that the moving walls are the side walls of two rolls rotating in opposite directions. In view of Takeuchi, the Examiner basically maintains that it would be obvious to transfer the teachings of Nishii on a twin-roll caster. While Takeuchi may disclose a twin-roll caster, Applicant submits that one skilled in the art would not be motivated to modify Nishii in the manner set forth by the Examiner. For example, the thickness of the products of Nishii are not consistent with the ones obtained with a twin-roll caster. In particular, in column 1, line 18, Takeuchi discloses that the strip thickness is close to the thickness of the final strip and is different from it by a millimetric value. Furthermore, Takeuchi is silent with regard to an injection of a lubricant/protective substance at the exit of the ingot mold.

At least based on the foregoing, Applicant submits that claim 20 is patentable over the cited references.

VI. Rejection under 35 U.S.C. § 103(a) in view of Nishii

The Examiner has rejected claim 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishii. Applicant submits that claim 21 is patentable at least by virtue of its dependency. In addition, claim 21 recites that the moving walls are two moving belts. Applicant submits that there is no teaching or suggestion in Nishii that its caster would or could comprise a casting device between two belts.

VII. Rejection under 35 U.S.C. § 103(a) in view of Nishii and Applicant's Admitted Prior Art ("AAPA")

The Examiner has rejected claim 22 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishii in view of the AAPA. Applicant submits, however, that claim 22 is patentable at least by virtue of its dependency.

VIII. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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Date: December 15, 2010